

REMARKS

The Examiner is thanked for indicating that claims 66-69 are allowable.

Favorable reconsideration of this application as presently amended is respectfully requested. Claims 1-82 are pending. No claim has been added or amended. It is noted that the office action overlooked claims 81 and 82.

The IDS provided herewith lists patents identified by several large corporations during licensing discussions between the inventor and the companies.

Claim 1 stands rejected under 35 U.S.C. 102(b) as being anticipated by Shepard, *et al.* (2002/0160143). It is the examiner's position that Shepard, *et al.* show a particle entrapment pad 12 having an impervious bottom layer (unnumbered), see [0011] and a high loft nonwoven non-absorbent layer [0017], [0019].

It is respectfully submitted that Shepard, *et al.* does not disclose a high loft pad. The term high loft nonwoven is defined in the application as, "a matrix formed of fibers or filaments randomly oriented and fused at intersecting points of said fibers or filaments".

Is evident from the Shepard, *et al.* disclosure that Shepard, *et al.* has a plurality of individual high loft loops. Shepard, *et al.* contrasts the individual high loft loops from the matrix from which it extends. The relevant passages in Shepard, *et al.* are as follows:

[0085] . . . is needled from the lower side to produce high-loft loops extending from the upper side. To produce such loops, the sharp tips of the notched needles of loom 154 are extended a substantial distance (e.g., about 1/4 inch or 6.3 mm) beyond the thickness of the batt in the opposite direction as the needles of the first needling station, pushing individual fibers away from the bulk of the batt to form upstanding loops. When the needles retract, the loops remain. The loops may be formed of fibers that originally lay on the opposite side of the batt, or from fibers drawn from the middle of the batt. In either case, the needles drag fibers out of the batt and leave them extending from the bulk of the

batt as loops which give one side of the super-neededled batt a fuzzy appearance. (emphasis added)

[0087] Needle loom 154 may include an additional, second needling station (not shown). After producing high-loft loops extending from one surface, the batt is super neededled in the other direction to produce loops extending from its other surface, such that both sides have extended loops.

It is thus evident that Shepard, *et al.* does not disclose a high loft matrix but rather discloses a non-high loft matrix, from which individual high loft loops extend. Individual loops do not constitute a matrix because, among other things, they are not fused at intersecting points to other high loft loops. Accordingly, Shepard, *et al.* does not meet the terms of claim 1, and in particular, does not disclose high loft fibers or filaments fused to each other.

Claims 2, 3, 71, 75 and 76 stand rejected under 35 U.S.C. 102(b) as being unpatentable over Shepard, *et al.* in view of Lobe (5,152,250). The examiner has acknowledged that Shepard, *et al.* do not show the use of a cling enhancing substance. This deficit is purported over come by a showing in Loeb of a litter 11 which is treated with a substance to enhance cling, such as oil, noting column 3, lines 1-4. The examiner notes that with respect to claim 2, to use the cling enhancing substance of Loeb with the particle entrapment pad of Shepard, *et al.* would have been obvious to one skilled in the art in order to prevent particles from bouncing free of the pad.

The remarks supra, with respect to Shepard, *et al.* are applicable to this rejection.

Specifically, with respect to Lobe, it is seen that Lobe is directed to “an absorbent animal litter that agglomerates when liquid is applied thereto such that the agglomerated mass and absorbed liquid can be removed from the dry animal litter.” Loeb col 2, line 15- 19. Additionally, Lobe notes that, “preferred adhering agent is mineral oil, but one skilled in the art will readily recognize that other non-aqueous liquids having similar adhering abilities could be used. For example, vegetable oils may be used.” Col 3, lines 1-3.

It is thus seen that Loeb does not relate to a nonwoven and is totally incompatible with the nonwoven of Shepard, *et al.* Adding mineral oil to the Shepard, *et al.* structure would be at least detrimental, if it does not render it inoperative and adding the Shepard, *et al.* structure to Loeb would be counterproductive.

Accordingly, not only is there an absence of a motivation to combine the Shepard, *et al.* and Loeb teachings, but the teachings are from unrelated arts and are completely incompatible

and a rejection based on such combination is not supported by the patent law as set forth in detail in *Princeton Biochemicals, Inc. v Beckman Coulter*, June 9, 2005.

Claims 4, 6, and 33 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Shepard, *et al.*, in view of Kiebke (5,126,980) (sic). The examiner is courteously thanked for acknowledging that Shepard, *et al.* does not disclose the use of baking soda or odor-counteractive agent. The examiner notes, however, that Kiebke (5,216,980) shows a litter composition containing baking soda or sodium bicarbonate and a deodorizer.

The remarks supra, with respect to Shepard, *et al.* are applicable to this rejection.

Looking to column 3, lines 56-67 of Kiebke, as identified by the examiner, it is seen that the Kiebke teaching relates to:

“A quantity of sodium bicarbonate or baking soda is also added to the mixture to activate the clumping action and to neutralize odors from the waste matter. A relative mixture range of this material to the purified semolina might comprise 1-5% bicarbonate to semolina. Settling of the bicarbonate is partially prevented by the fine grained semolina.

To further neutralize any waste matter odors and provide a masking scent, the present litter 8 includes a quantity of ground corn cob pieces. The corn cob particulate is impregnated with a biodegradable and digestible deodorizer or neutralizer.”

There can be no doubt that Kiebke's use of sodium bicarbonate or baking soda is directed to producing a clumping action and that such an action is totally incompatible with the teachings of Shepard, *et al.*. Applicant's structure as defined in the claims has a utility totally related to that of either Shepard, *et al.* or Kiebke. Thus, while the combination has utility in applicant's structure as defined in the claims, there is an absence of utility in such a combination in Shepard, *et al.* Shepard, *et al.* required unencumbered high loft loops and adding sodium bicarbonate or baking soda to the Shepard, *et al.* high loft loops would be extremely counter productive. Absent

motivation to combine Shepard, *et al.* with Kiebke, a rejection based on such combination is not supported by the patent law as set forth in detail in *Princeton Biochemicals, Inc. v Beckman Coulter*, June 9, 2005.

Claim 5 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Shepard, *et al.* in view of Goss et al (6,039,004). It is the examiner's position that while Shepard, *et al.* does not disclose the use of an anti-microbial agent Goss, *et al.* teaches the use of an anti-microbial agent with an animal liter. The examiner concludes the use of the anti-microbial agent of Goss, *et al.* with the particle entrapment pad of Shepard, *et al.*, would have been obvious to one skilled in the art in order to provide a more sanitary area for the animal and more sanitary clean up for the owner.

The remarks supra, with respect to Shepard, *et al.* are applicable to this rejection.

The examiner's reference to "the particle entrapment pad of Shepard, *et al.*" is extremely significant in regard to the rejection of claim 5, as well as all of the rejections by the examiner.

Shepard, *et al.* does not disclose a particle entrapment pad. Neither the term "particle", "entrapment", nor "pad" is found within the four corners of the Shepard, *et al.* patent.

According to Shepard, *et al.*, the patent discloses is a lightweight, non-woven loop products for hook-and-loop fastening Lightweight, non-woven loop products for hook-and-loop fastening. (See Abstract, claims 1-61, ¶¶ [0002], [0006] to [0008], etc.) The term "loop fastener" and "fastener" are found throughout the patent. Accordingly, the examiner's reference to "the particle entrapment pad of Shepard, *et al.*" is unsupported by the patent.

It is recognized that in terms of patentability, a claim must define over a prior structure, irrespective of the respective uses of the prior structure and the claimed structure. However, when combining references, motivation to combine becomes the critical issue. A rejection may

not be based on a combination rejection on two or more prior art patents irrespective of their uses. (See *Princeton*, cited above.)

Looking now to Goss et al, attention is invited to the SUMMARY OF THE INVENTION, wherein it is stated that:

“A method of making a cellulosic animal litter product effective in the control of noxious odors and ammonia arising from the decomposition of animal wastes comprising contacting selected cellulosic granules with a bactericide which can be 1,2-dibromo-2,4-dicyanobutane, sodium borate, and mixtures thereof to produce an antimicrobial litter which is then applied to a pet litter box. The cellulosic granules contain no more than about 60% by weight of cellulose in combination with a mineral filler. The cellulosic animal litter can also contain an organic or inorganic clumping agent such as a galactomannan gum or sodium bentonite.”

The Goss et al patent is directed to a litter that is effective in the control of noxious odors. It is inconceivable that one would add an odor counteracting agent to the nonwoven hook and loop fastener of Shepard. Additionally, it is illogical for the Shepard fastener to contain animal litter, since such particles would clog the loops and render the fastener inoperative.

Similarly, an anti-microbial agent would serve no utilitarian function in the Shepard fastener. Additionally, the use of the Goss, *et al.* litter in a nonwoven matrix would negate the functions of the clumping litter.

Claim 20 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Shepard, *et al.* in view of Harris (6,050,223). It is the examiner's position that Shepard, *et al.* do not show the pad in use with a litter box. Harris shows a litter mat 10 placed adjacent to a cat litter box 34, noting Figure 6.

The examiner further notes that to use the pad placement of Harris with the particle entrapment pad of Shepard, *et al.* would have been obvious to one skilled in the art in order to trap particles from the litter box on the animal's feet.

As previously noted above, the examiner's reference to "the particle entrapment pad of Shepard, *et al.*" is not consistent with the Shepard, *et al.* disclosure. Neither the term "particle", "entrapment", nor "pad" is found within the four corners of the Shepard, *et al.* patent. The Shepard, *et al.* disclosure is limited to hook-and-loop fastening Lightweight, non-woven loop products for hook-and-loop fastening. In contrast to the absence of the terms, "particle", "entrapment", and "pad", the terms "loop fastener" and "fastener" are found throughout the patent. Accordingly, the examiner's reference to "the particle entrapment pad of Shepard, *et al.*" is unsupported by the patent.

Claim 29 stands rejected under 35 U.S.C. 103 as being unpatentable over Shepard, *et al.* in view of Cordani (5,834,104). The examiner is thanked for acknowledging that Shepard, *et al.* does not show the pad in use in workshops, however, the examiner states that Cordani shows a pad 10 having a non-woven absorption layer 23 and an impervious bottom layer 24 which is used in workshops, as shown in Figures 1 and 2. The examiner concludes that with respect to claim 29, it would be have been obvious to one skilled in the art, to use the pad placement of Cordani with the particle entrapment pad of Shepard, *et al.*

The examiner's attention is invited to the remarks supra, with respect to Shepard, *et al.*, not disclosing a particle entrapment pad.

It appears that the examiner may be equating the engagement of a hook with a loop for fastening purposes, with entrapment of particles within the body of a high loft nonwoven pad. With all due respect it is submitted that defining Shepard, *et al.*'s loop fastener with an entrapment pad is in severe conflict with both the disclosure and intent of the Shepard, *et al.*

patent. The Shepard, *et al.* system is designed for releasable engagement of the hook and loop components of a releasable fastener. Entrapment of particles is incompatible with the functioning of the Shepard, *et al.* structure, since particles would fill the loops and prevent engagement of hooks with loops.

It is thus evident that the uses of the structures of Shepard, *et al.* and Cordani are totally incompatible.

Claim 30 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Shepard, *et al.* in view of Bishop (6,452,503). The examiner is thanked for noting that Shepard, *et al.* does not teach the use of the pad for cleaning. It is the examiner's position that Bishop shows a cleaning pad for cleaning surfaces having a non-woven top layer 24 and bottom layer 22. The examiner states that that the use of the pad of Shepard, *et al.* with the function of Bishop would have been obvious to one skilled in the art as a replacement of functional equivalents.

The fact that Shepard, *et al.* does not disclose a pad, but rather discloses a fastener, is discussed in detail above.

The examiner's attention is respectfully directed to the Bishop SUMMARY OF THE INVENTION.

"The universal cleaning and polishing pad of the present invention includes densely packed fibrillated face yarns on one side and an opposite polishing side, which alternatively may be a resilient, textured surface, or an open-celled sponge. The pad is constructed of all synthetic materials using conventional carpet manufacturing techniques. Synthetic fibrillated face yarns are tufted into a primary back which may be a woven polypropylene product, scrim, sponge or other sheet material. . . .".

Bishop thus relates to a cleaning and polishing pad having densely packed fibrillated face yarns. This is the other end of the spectrum from high loft non wovens. The examiner's

statement that the, “use of the pad of Shepard, *et al.* with the function of Bishop would have been obvious to one skilled in the art as a replacement of functional equivalents”, is not supported by either the Shepard, *et al.*, or Bishop patents. It is respectfully requested that the examiner identify a disclosure in either patent that supports the statement “a replacement of functional equivalents”. It is simply not understood how a fastener and a cleaning pad could be considered to have equivalent functions.

Claims 72, 74, and 78 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Shepard, *et al.* in view of Loeb, as applied to claims 71 and 75, in further in view of Kiebke. It is the examiner’s position that to use the baking soda and deodorizer of Kiebke with the particle entrapment pad of the combination of Shepard, *et al.*, and Loeb.

The fact that Shepard, *et al.* does not disclose a particle entrapment pad, has been discussed above. Similarly, Kiebke and Loeb have been discussed in detail above.

The problems associated with attempts to combine unrelated technologies is compounded in the attempted combining of the three patents. Whether or not the teachings of Kiebke and Loeb can be combined under the patent law, is not the issue in regard to claims 72, 74, and 78. The issue is whether the teachings of Kiebke and Loeb can be combined with that of Shepard, *et al.*, under the patent law.

Applicant submits herewith a detailed discussion of **“THE LAW GOVERNING REJECTIONS BASED ON A COMBINATION OF REFERENCES”** that focuses on *Princeton*. It is requested that the examiner provide a legal basis for combining Shepard, *et al.*, with the other patents.

If the Examiner has any questions or concerns regarding the present response, the Examiner is invited to contact Sheldon Parker at 703-593-2041. In view of the foregoing, it is

respectfully submitted that this application is in condition for allowance, and favorable action is respectfully solicited.

Respectfully submitted,



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APPENDIX I

THE LAW GOVERNING REJECTIONS BASED ON A COMBINATION OF REFERENCES HAS BEEN SET FORTH IN DETAIL IN A RECENT DECISION OF THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT.

The basic rules relating to rejections based on combinations of patents are stated by the Court of Appeals for the Federal Circuit, in *Princeton Biochemicals, Inc. v Beckman Coulter*, June 9, 2005. 411 F. 3d 1332, 75 U.S.P.Q.2d 1051.

“Section 103 of title 35 of the United States Code states:

A patent may not be obtained...if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. [35 U.S.C. § 103(a) (2000)].

The legal conclusion, that a claim is obvious within § 103(a), depends on at least four underlying factual issues: (1) the scope and content of the prior art; (2) differences between the prior art and the claims at issue; (3) the level of ordinary skill in the pertinent art; and (4) evaluation of any relevant secondary considerations. *See Graham v. John Deere Co. of Kansas.* *Princeton* at 1337.

The Court is not reciting new law, but rather provides a detailed explanation of the law as it has been for many years. It is stated in *Princeton*, at 1337,

There is no dispute that the references introduced at trial disclosed every element in claim 32. Guzman admitted this in his testimony at trial. Thus, aside from the relevance of the asserted references, the only disputed issue at trial, and asserted on appeal, was whether there was motivation to combine the elements already present in the prior art. As this court outlined in *Ruiz v. A.B. Chance Co.*, 357 F.3d. 1270, 1275 (Fed. Cir. 2004), in making the assessment of differences between the prior art and the claimed subject matter, section 103 specifically requires consideration of the claimed invention “as a whole.” Inventions typically are new combinations of existing principles or features. *Envil Designs, Ltd. V. Union Oil Co.*, 713 F.2d. 693, 698 (Fed. Cir. 1983) (noting that “virtually all [inventions] are combinations of old elements”). *Id.*

The motivation to combine must be found in the prior art, not in the invention of the patent application. The court further states at 1337,

“The ‘as a whole’ instruction in title 35 prevents evaluation of the invention part by part.” Ruiz, 375 F.3d. at 1275. “Without this important requirement, an obviousness assessment might successfully break an invention into its component parts, then find a prior art reference corresponding to each component. Id. This line of reasoning would import hindsight into the obviousness determination by using the invention as a roadmap to find its prior art components. Further, this improper method would discount the value of combining various existing features or principles in a new way to achieve a new result—often the essence of invention. Id.

Contrary to this reasoning, section 103 requires assessment of the invention as a whole. Id. This “as a whole” assessment of the invention requires a showing that an artisan of ordinary skill in the art at the time of invention, confronted by the same problems as the inventor and with no knowledge of the claimed invention, would have selected the various elements from the prior art and combined them in the claimed manner. Id. In other words, section 103 requires some suggestion or motivation, before the invention itself, to make the new combination. See In re Rouffet, 149 F.3d 1350, 1355-56 (Fed. Cir. 1998).”

The words to note in particular are “section 103 **requires some suggestion or motivation**, before the invention itself, to make the new combination”. (Emphasis added.) Evaluation of the invention part by part is prevented by title 35. The examiner does not allege that there was a recognition of the shortcomings of the prior structures, or that motivation to make the combinations as described in the claims, can be found in any of the references identified by the examiner. The examiner avoids the issue by stating that the combination was obvious, and that if one wanted to obtain the benefits taught in the present patent, they would combine features found in the patents. Further, the examiner characterizes the Shepard et al., fastener as a particle entrapment pad, without identifying a basis for this characterization. The examiner, now having characterized the fastener as a particle entrapment pad, assigns to the fastener, purported obvious uses and shortcomings of a pad. The examiner’s position is in direct conflict with the law, as evident from the Princeton case. The examiner must show that the **motivation** to obtain the benefits that flow from the combination is found in the references. The

examiner has not identified anything in Shepard et al, that would bring the fastener into the art of the secondary references. While the nature of a problem may in some circumstances supply a motivation to combine prior art references the patents relied upon by the Examiner to modify Shepard et al., are from different, unrelated technologies. "A reference is appropriate prior art if within the field of the inventor's endeavor." Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc., 796 F.2d 443, 449 (Fed. Cir. 1986).

The examiner's attention is further invited to Princeton, at 1338, wherein the court establishes that the suggestion or motivation to modify must be found in the cited references.

"As discussed, simply identifying all of the elements in a claim in the prior art does not render a claim obvious. Ruiz, 357 F.3d at 1275. Instead section 103 requires some suggestion or motivation in the prior art to make the new combination. Rouffet, 149 F.3d at 1355-56. A suggestion or motivation to modify prior art teachings may appear in the content of the public prior art, in the nature of the problem addressed by the invention, or even in the knowledge of one of ordinary skill in the art. 04-1493 1204-1493 12, 225 F.3d 1349, 1356 (Fed. Cir. 2000).

....
[T]he combination is obvious. Every one of the individual ideas is obvious. And the combination is absolutely obvious. Everybody in all of the related fields in all of the related technologies is doing those kinds of things...The entire package taken together is obvious."

Princeton at 1339, provides the following illuminating discussion:

"A reference is reasonably pertinent if, even though it may be in a different field of endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem." citing In re GPAC Inc., 57 F.3d 1573, 1578 (Fed. Cir. 1995.) If a reference's disclosure relates to the same problem as the claimed invention, "that fact supports use of that reference in an obviousness rejection." In re Clay, 966 F.2d 656, 659 (Fed. Cir. 1992)."

Once again, we see that the standards for a rejection of a claim based on a combination of references, are not met by the rejection in the present case. The prior art references do not address the same problems in the same way. The patents used to modify Shepard et al., come from unrelated, non-analogous art.

With all due respect to the examiner, it appears to be obvious that the examiner's rejections fall extremely short of the Black Letter Law, as specified in Princeton and in numerous other court decisions, as for example, those cited in Princeton. Solutions to problems may seem obvious after the problem is recognized, but it often takes creative genius to recognize the problem.

APPENDIX II

1. Princeton Biochemicals, Inc. v. Beckman Coulter, Inc.,

411 F.3d 1332, 75 U.S.P.Q.2d 1051, C.A.Fed, 2005

Before RADER, SCHALL, and GAJARSA, Circuit Judges.

RADER, Circuit Judge.

In the United States District Court for the District of New Jersey, a jury found in favor of Plaintiff-Appellant Princeton Biochemicals, Inc. (Princeton), rejecting the claims of Defendant-Appellee Beckman Coulter, Inc. (Beckman) that Princeton's U.S. Patent No. 5,045,172 (the '172 patent) is invalid by reason of obviousness and prior invention, and finding that Beckman infringed the '172 patent. On all three questions, however, the district court found the jury's verdict unsupported by substantial evidence and granted judgment as a matter of law (JMOL) in favor of Beckman. Princeton Biochemicals, Inc. v. Beckman Coulter, Inc., No. 96-5541 (MLC), 2004 WL 1398227 (D.N.J. June 17, 2004). Because the district court properly concluded that substantial evidence did not support the jury's verdict of nonobviousness, this court affirms.

I. Dr. Norberto Guzman is the inventor of the '172 patent, which he assigned to Princeton. The '172 patent claims a capillary electrophoresis device. Electrophoresis is one method available for the investigation of biological materials, and is an efficient procedure for the separation and detection of proteins and other matter. '172 patent, col. 1, ll. 16-20. Electrophoretic separation, one species of electrophoresis, relies on the differential speeds of the migration of differently charged particles in an electric field. Id. at col. 1, ll. 21-23. Capillary electrophoresis is one type of electrophoretic separation. Id. at col. 1, ll. 17-20. As the '172 patent describes,

[I]t is generally known that a material, containing mixtures of substances to be analyzed, can be passed along a capillary tube and through a detector under the influence of an applied voltage.

The applied voltage charges the substances and the charges on the substances determine their spacing and their speed of passage along the capillary tube.

Id. at col. 2, ll. 32-38. Capillary tubes, generally made of quartz, range in lengths of roughly 10 to 100 centimeters and 25-200 microns in diameter. Id. at col. 1, ll. 50-58. Due to the dimensions of a tube, capillary electrophoresis requires only a minute sample size to efficiently separate and identify the components of a solution.

Claim 32 of the '172 patent claims a specific capillary electrophoresis device: Capillary electrophoresis apparatus comprising a capillary tube of the type which can be electrically charged, said capillary tube having first and second ends, first means at said first end of said capillary tube providing a source of buffer solution and a source of a sample substance to be analyzed, second means coupled to said apparatus for applying electrical potential across said capillary tube whereby a sample flows through said capillary tube and past said detector, said first means includes a rotatable table carrying a plurality of sample cups and a holder for holding an end of said capillary tube in operative relation with one of the said cups, said cups containing

either buffer solution or a sample to be analyzed, and said capillary tube is in the form of a coil of glass tubing [secured to a support member].

Id. at col. 23, ll. 30-47 (emphases added). The parties stipulated that claim 32 contains eight elements, as follows:

Capillary electrophoresis apparatus comprising:

- (1) a capillary tube of the type which can be electrically charged,
- (2) said capillary tube having first and second ends,
- (3) first means at said first end of said capillary tube providing a source of buffer solution and a source of sample substance to be analyzed,
- (4) second means coupled to said apparatus for applying electrical potential across said capillary tube whereby a sample flows through said capillary tube and past said detector,
- (5) said first means includes a rotatable table carrying a plurality of sample cups and
- (6) a holder for holding an end of said capillary tube in operative relation with one of the said cups, said cups containing either buffer solution or a sample to be analyzed, and
- (7) said capillary tube is in the form of a coil of glass tubing
- (8) secured to a support member.

Id.

The words “secured to a support member” are not present in the final, published version of the ‘172 patent. The parties stipulated at trial that this was a printing error only. Those words appear in claim 32 as issued. Beckman manufactures and sells the P/ACE 2000 and 5000 Series capillary electrophoresis devices (“the accused devices” or “the P/ACE devices”).

Beckman contends a prototype device, named OTEP II, contained all the elements recited in claim 32. Princeton does not contest that Beckman made OTEP II by February 1, 1987. That date, therefore, is the relevant reduction-to practice date for the P/ACE devices. Beckman began selling P/ACE devices as early as 1993.

Guzman filed the application for the ‘172 patent on November 14, 1988. Thus, the critical date for evaluating 35 U.S.C. § 102(b) prior art references is November 14, 1987. Several references, published before November 14, 1987, discussed the electrophoretic concepts embodied in claim 32 of the ‘172 patent. Two particular references stand out. The first, an article by Honda dated September 1987, describes ways to introduce automatically different samples into a capillary electrophoresis device. Susumu Honda, et. al., “Evaluation of an Automatic Siphonic Sampler for Capillary Zone Electrophoresis,” Int’l J. on Chromatography, Electrophoresis and Related Methods. The second, a Ph.D. thesis by Lukacs, was published in 1983 by a graduate student of Dr. James W. Jorgenson, an expert who testified on behalf of Beckman. The Lukacs thesis discloses the coiling of capillary tubes during electrophoretic work. Coiling a capillary tube lengthens the tubing without increasing the size of the electrophoretic device. A longer tube provides better separation and identification of analytes. On November 21, 1996, Princeton filed suit, alleging that the P/ACE devices infringed claim 32 of the ‘172 patent. Beckman denied infringement and sought a declaration of invalidity on grounds of obviousness and prior invention.

Following a grant of summary judgment of noninfringement, Princeton appealed. In an unpublished opinion, this court reversed, holding that the district court had improperly construed

the sixth element in claim 32. *Princeton Biochemicals, Inc. v. Beckman Instruments, Inc.*, 1999 WL 641233, at *6 (Fed. Cir. 1999) (“The proper interpretation of the holder limitation is that ‘in operative relation’ encompasses both vertical movement of the holder as well as vertical movement of the sample cups and the table.”).

On remand, the district court conducted a nine-day trial followed by motions for JMOL from both parties. The district court reserved judgment until after the jury verdict. The jury decided in favor of Princeton on all issues. Specifically, the jury found that Princeton proved by a preponderance of the evidence that Beckman’s devices infringed claim 32 of the ‘172 patent; that Beckman did not prove by clear and convincing evidence that claim 32 of the patent was invalid for obviousness; and finally, that Beckman did not prove “by clear and convincing evidence that claim 32 is invalid because the invention described in that claim was made by Beckman before it was made by Princeton.” Beckman timely renewed its JMOL motion and moved alternatively for a new trial.

In due course, the district court issued a carefully composed, 194-page opinion that set aside the jury’s verdict and found all counts in favor of Beckman. *Princeton Biochemicals, Inc.*, 2004 WL 1398227. The district court also granted Beckman’s motion for a new trial. *Id.* at *91. Princeton timely appealed to this court. This court has jurisdiction under 28 U.S.C. § 1295(a)(1).

II. “The grant or denial of a motion for judgment as a matter of law is a procedural issue not unique to patent law, reviewed under the law of the regional circuit in which the appeal from the district court would usually lie.” *Summit Tech., Inc. v. Nidek Co.*, 363 F.3d 1219, 1223 (Fed. Cir. 2004). Under the law of the Third Circuit, review of a district court’s ruling on JMOL is plenary. *Shellenberger v. Summit Bancorp, Inc.*, 318 F.3d 183, 186 (3rd Cir. 2003). The party requesting the JMOL must show that substantial evidence did not support the jury’s findings, where substantial evidence is “such relevant evidence from the record taken as a whole as might be accepted by a reasonable mind as adequate to support the finding under review.” *Tex. Instruments Inc. v. Cypress Semiconductor Corp.*, 90 F.3d 1558, 1563 (Fed. Cir. 1996). This court must also consider all the evidence before the jury and draw all reasonable inferences in favor of the prevailing party on that issue, i.e., the non-movant. *Richardson-Vicks Inc. v. Upjohn Co.*, 122 F.3d 1476, 1479 (Fed. Cir. 1997). Regarding the obviousness issue in this case, this court must determine whether the jury had substantial evidence upon which to conclude that Beckman met its burden of showing invalidity by clear and convincing evidence. This court also reviews the legal standards that the jury applied in reaching its verdict to determine whether they were correct as a matter of law. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 975 (Fed. Cir. 1995) (en banc), *aff’d*, 517 U.S. 370, 134 L. Ed. 2d 577, 116 S. Ct. 1384 (1996). When reviewing a jury’s verdict on obviousness the court reviews the “conclusions on obviousness, a question of law, without deference, and the underlying findings of fact, whether explicit or implicit within the verdict, for substantial evidence.” *LNP Eng’g Plastics, Inc. v. Miller Waste Mills, Inc.*, 275 F.3d 1347, 1353 (Fed. Cir. 2001). Specifically, the jury is presumed to have “resolved the underlying factual disputes in favor of the verdict winner and [this court leaves] those presumed findings undisturbed if they are supported by substantial evidence”. *Jurgens v. McKasy*, 927 F.2d 1552, 1557 (Fed. Cir. 1991).

III. Section 103 of title 35 of the United States Code states: A patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such

that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

35 U.S.C. § 103(a) (2000). The legal conclusion, that a claim is obvious within § 103(a), depends on at least four underlying factual issues: (1) the scope and content of the prior art; (2) differences between the prior art and the claims at issue; (3) the level of ordinary skill in the pertinent art; and (4) evaluation of any relevant secondary considerations. See *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17 (1966). Analyzing the record support for those factors for Beckman's Rule 50(b) motion, the trial court concluded that claim 32 was obvious. Thus, the court granted Beckman's motion for JMOL, set aside the jury verdict rejecting the obviousness challenge, and entered judgment invalidating claim 32.

There is no dispute that the references introduced at trial disclosed every element in claim 32. Guzman admitted this in his testimony at trial. Thus, aside from the relevance of the asserted references, the only disputed issue at trial, and asserted on appeal, was whether there was motivation to combine the elements already present in the prior art. As this court outlined in *Ruiz v. A.B.Chance Co.*, 357 F.3d 1270, 1275 (Fed. Cir. 2004), in making the assessment of differences between the prior art and the claimed subject matter, section 103 specifically requires consideration of the claimed invention "as a whole." Inventions typically are new combinations of existing principles or features. *Env'tl. Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 698 (Fed. Cir. 1983) (noting that "virtually all [inventions] are combinations of old elements"). The "as a whole" instruction in title 35 prevents evaluation of the invention part by part. *Ruiz*, 357 F.3d at 1275. Without this important requirement, an obviousness assessment might successfully break an invention into its component parts, then find a prior art reference corresponding to each component. *Id.* This line of reasoning would import hindsight into the obviousness determination by using the invention as a roadmap to find its prior art components. Further, this improper method would discount the value of combining various existing features or principles in a new way to achieve a new result - often the essence of invention. *Id.*

Contrary to this reasoning, section 103 requires assessment of the invention as a whole. *Id.* This "as a whole" assessment of the invention requires a showing that an artisan of ordinary skill in the art at the time of invention, confronted by the same problems as the inventor and with no knowledge of the claimed invention, would have selected the various elements from the prior art and combined them in the claimed manner. *Id.* In other words, section 103 requires some suggestion or motivation, before the invention itself, to make the new combination. See *In re Rouffet*, 149 F.3d 1350, 1355-56 (Fed. Cir. 1998). In setting aside the jury's verdict and holding claim 32 obvious, the district court systematically and vigilantly considered the relevant prior art references and testimony of both parties. The Honda article relates to claim 32's first six elements and describes an automated capillary electrophoresis device with a rotatable table carrying a plurality of sample cups. Princeton does not contest that the Honda article discloses elements one through six. Therefore, at the time of Princeton's claim 32 invention, the prior art had disclosed elements one through six.

With respect to the seventh element, the district court found that the Lukacs thesis disclosed the construction and use of a coiled glass capillary in a capillary electrophoresis apparatus. *Princeton Biochemicals, Inc.*, 2004 WL 1398227, at *40. Additionally, Dr. Jorgenson testified about Ms. Lukacs's work with coiled capillaries based on his own observations in the laboratory with Ms.

Lukacs. He noted that they coiled glass capillaries that were two to three meters and longer. *Id.* at *24. In light of the Lukacs thesis, Dr. Guzman conceded at trial that he was not the first to coil a capillary in an electrophoresis device. *Id.* at *40. Therefore, at the time of Princeton's claim 32 invention, element 7 was also known in the prior art.

Element 8 of claim 32 recites the requirement that the capillary tube of claim 32, in the form of glass tubing, must be "secured to a support member." At trial, Dr. Guzman testified that he did not invent "securing capillary tubes or any portion thereof to support members" and did not deny that this element was "old" or that it did not "add" anything new to the claim. From this, the district court correctly concluded that element 8 was known in the prior art. *Id.* at *40. Furthermore, in its brief to this court, Princeton conceded that elements one through eight were separately known in the prior art. As discussed, simply identifying all of the elements in a claim in the prior art does not render a claim obvious. *Ruiz*, 357 F.3d at 1275. Instead section 103 requires some suggestion or motivation in the prior art to make the new combination. *Rouffet*, 149 F.3d at 1355-56. A suggestion or motivation to modify prior art teachings may appear in the content of the public prior art, in the nature of the problem addressed by the invention, or even in the knowledge of one of ordinary skill in the art. *SIBIA Neurosciences, Inc. v. Cadus Pharm. Corp.*, 225 F.3d 1349, 1356 (Fed. Cir. 2000).

Dr. Jorgenson testified that the motivation to combine these references was found in the knowledge of those skilled in the art at the time of Guzman's invention. See *SIBIA Neurosciences, Inc.*, 225 F.3d at 1356 (stating that motivation, suggestion or reason to combine items of prior art may come from the knowledge of one of ordinary skill in the art). As Jorgenson explained: [T]he combination is obvious. Every one of the individual ideas is obvious. And the combination is absolutely obvious. Everybody in all of the related fields in all of the related technologies is doing those kinds of things The entire package taken together is obvious. *Id.* Princeton offered no evidence to rebut Dr. Jorgenson's testimony. Dr. Jorgenson's testimony on motivation to combine is un rebutted. Moreover, it is consistent with the prior art introduced at trial. The only additions to the Honda prior art in this invention were coiling the capillaries (Lukacs prior art) and supporting the coils (concededly prior art). Both of those simple additions appear in other prior art references. Thus, Dr. Jorgenson testified, without any rebutting evidence in the record, that the suggestion to coil and secure the capillaries in the Honda device was within the knowledge of one of skill in the art. In *In re Lee*, this court expressed skepticism about invoking the knowledge of a skilled artisan to supply the motivation to combine on a scanty record. 277 F.3d 1338, 1343-44 (Fed. Cir. 2002) ("This factual question of motivation . . . could not be resolved on subjective belief and unknown authority."). Dr. Jorgenson supplied detailed analysis of the prior art and the reasons that one of ordinary skill would possess knowledge and motivation to combine these simple elements.

In addition, the nature of the problem supplies a motivation to combine these prior art references. The district court provided a detailed analysis of the nature of the problem solved by the invention. *Princeton Biochemicals, Inc.*, 2004 WL 1398227, at *37-40. The problem was lengthening and securing the capillaries on the Honda automatic device to produce better separation. *Id.* at *38. The prior art Lukacs thesis stated that lengthening was precisely the reason for coiling. *Id.* at *39. With regard to securing, Dr. Osborne, a Beckman witness, testified about the problem of a capillary electrophoresis device whose capillary swayed during use and affected the separation result. *Id.* Dr. Osborne observed: "[W]e did not want the capillary to move during the separation." *Id.* In other words, the nature of the problem called for exactly the solutions in

the prior art. Moreover the nature of the problem, as noted again in Dr. Jorgenson's testimony, called for the combination. Dr. Jorgenson observed that the problem called for coiled electrophoresis tubes, including capillary tubes, secured in place in a variety of ways. *Id.* He also testified that one of ordinary skill in the art at the time of the invention would know to coil a capillary to save space. *Id.* Regarding the securing of a capillary tube to a support member, Dr. Jorgenson also testified that it would be obvious to one of ordinary skill in the art to do so, as "you don't want a coil floating around without some kind of support." *Id.* Thus, the nature of the problem also supplies a motivation to make this combination of closely related prior art elements.

The district court also properly found that the references for this obviousness analysis were proper prior art. A reference is appropriate prior art if within the field of the inventor's endeavor. *Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc.*, 796 F.2d 443, 449 (Fed. Cir. 1986). Alternatively, a reference qualifies as prior art if "reasonably pertinent to the particular problem with which the inventor was involved." *Id.* "A reference is reasonably pertinent if, even though it may be in a different field of endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem." *In re GPAC Inc.*, 57 F.3d 1573, 1578 (Fed. Cir. 1995) (quotations and citations omitted). If a reference's disclosure relates to the same problem as the claimed invention, "that fact supports use of that reference in an obviousness rejection." *In re Clay*, 966 F.2d 656, 659 (Fed. Cir. 1992).

In this case, all the references for obviousness constitute analogous art, even though some of the references fall within the related field of liquid chromatography. Throughout the prosecution history of the '172 patent, the examiner consistently rejected elements one through six of claim 32 as obvious, citing references ranging from capillary electrophoresis to liquid chromatography a related means of separating analytes. The examiner stated on the record: "[L]iquid chromatography and capillary electrophoresis are closely related techniques." The district court also itemized other references in the chemical separations field, describing the relation to electrophoretic separation or chromatography or both. *Princeton Biochemicals, Inc.*, 2004 WL 1398227, at *36-37. The district court further established that capillary electrophoresis is closely related to the types of electrophoreses described in some of the references. *Id.* at *37. Finally, Dr. Jorgenson offered expert testimony that one of ordinary skill in the art would look to these related fields to solve problems in the field of capillary electrophoresis. *Id.* at *37. The district court also examined whether the prior art references were reasonably pertinent to the particular problems with which the invention of claim 32 was involved. *Id.* at *37-39. In defining such problems, the district court looked to Dr. Guzman's own testimony that the electrophoretic device needed to be compact and immobile. *Id.* at *38. As already noted, the district court properly assessed that the prior art references addressed those same problems in the same way. *Id.* at *39. In sum, the district court used proper prior art references in its correct obviousness analysis.

Viewing the evidence as a whole and in a light most favorable to Princeton, this court agrees with the district court that there was not substantial evidence to support the jury verdict. Because claim 32 is invalid for obviousness, this court need not reach the issues of prior invention and infringement.

COSTS

Each party shall bear its own costs.

AFFIRMED